



Wildlife and Heritage Service Black Bear Management Plan

2004 – 2013

by

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The Federal Aid in Wildlife Restoration Act funded the research, surveys and inventory data reported in the Management Plan, as well as the printing of this publication.

DNR-03-0105-0031

I. EXECUTIVE SUMMARY

Maryland's black bear population has rebounded from historical lows in the mid 20th Century. Today, bears are found in the western 4 counties, with the highest population density found in Garrett and western Allegany counties. This recovery is attributed to the improved habitat quality in western Maryland, and bear conservation actions imposed by Maryland and our neighboring states of Pennsylvania, Virginia and West Virginia.

Maryland's first 10-year black bear management plan was implemented in 1992. Much has happened since that plan was instituted. Bear numbers have increased and bears have spread eastward into previously unoccupied parts of Maryland. Nuisance problems have increased, and public attitudes toward bears continue to evolve as human-bear interactions increase. Research activities have been expanded, and new techniques have been developed to assist DNR agencies with managing nuisance bear activity (Appendix A).

DNR has traditionally managed Maryland's black bear population in a conservative manner. Hunting of bears has been prohibited since 1953. Nuisance resolution has taken many forms over the years, from actively trapping and moving problem bears, to implementing aversive conditioning techniques. As the 1992 Black Bear Management Plan came to an end, it was evident that additional planning was paramount to managing this unique resource into the 21st Century.

In 2002, DNR formed a Black Bear Task Force (BBTF) to review DNR's 1992 Black Bear Management Plan and to provide guidance in developing DNR's next black bear management plan. The BBTF, comprised of citizens from across Maryland, met until early in 2003 while it studied bear issues in the state and solicited input from the public regarding bear management (Appendix B). In February 2003, the BBTF submitted its final report and recommendations to DNR (Appendix C). Many of the BBTF recommendations have been incorporated into this management plan. Although the Task Force was comprised of people with varied interests and views regarding bears, they all agreed that black bears are a valued part of Maryland's ecosystem and that another 10-year management plan was important to the welfare of this truly charismatic species.

A primary objective of this plan is to maintain Maryland's black bear population at a level compatible with land use goals and acceptable social limits. Therefore, DNR must continue to gauge public sentiment regarding black bears and black bear management. In Spring 2004, DNR contracted with an independent research firm to conduct a statewide public opinion survey of Maryland residents' attitudes towards black bears and black bear management. Respondents were asked questions about their contacts and experiences with black bears, attitudes toward black bears, strategies to avoid black bear nuisance behavior, and their opinions of various population management tools.

This management plan reviews DNR's past black bear management efforts, state and regional black bear population trends, and current management techniques. Additionally, the plan lists black bear management goals and objectives, along with offering strategies to attain the desired outcomes. The plan will guide the management of Maryland's black bear resource based on scientific principles and in consideration of informed public input through December 2013.

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II. INTRODUCTION

The black bear (*Ursus americanus*) is the largest terrestrial mammal native to Maryland. Maryland shares this regional population of black bears with its surrounding states of Pennsylvania, Virginia, and West Virginia (Fig. 1). According to the 2003 Eastern Black Bear Workshop state status reports and information gathered from state bear biologists, there were an estimated 37,172 black bears inhabiting this 4 state region in 2003 (15,272 in PA, 8,000 in VA, 13,500 in WV, and 400 in MD). Currently, Maryland has a resident, breeding black bear population in the 4 westernmost counties (Garrett, Allegany, Washington, and Frederick), with the highest density of bears in Garrett and western Allegany Counties (Fig. 2).

Although the black bear population is geographically limited to western Maryland, it is a resource that is valued by citizens statewide. This 10-year management plan is intended to guide the Maryland Department of Natural Resources' (DNR) black bear management efforts based on sound scientific and biological principles and informed public input.

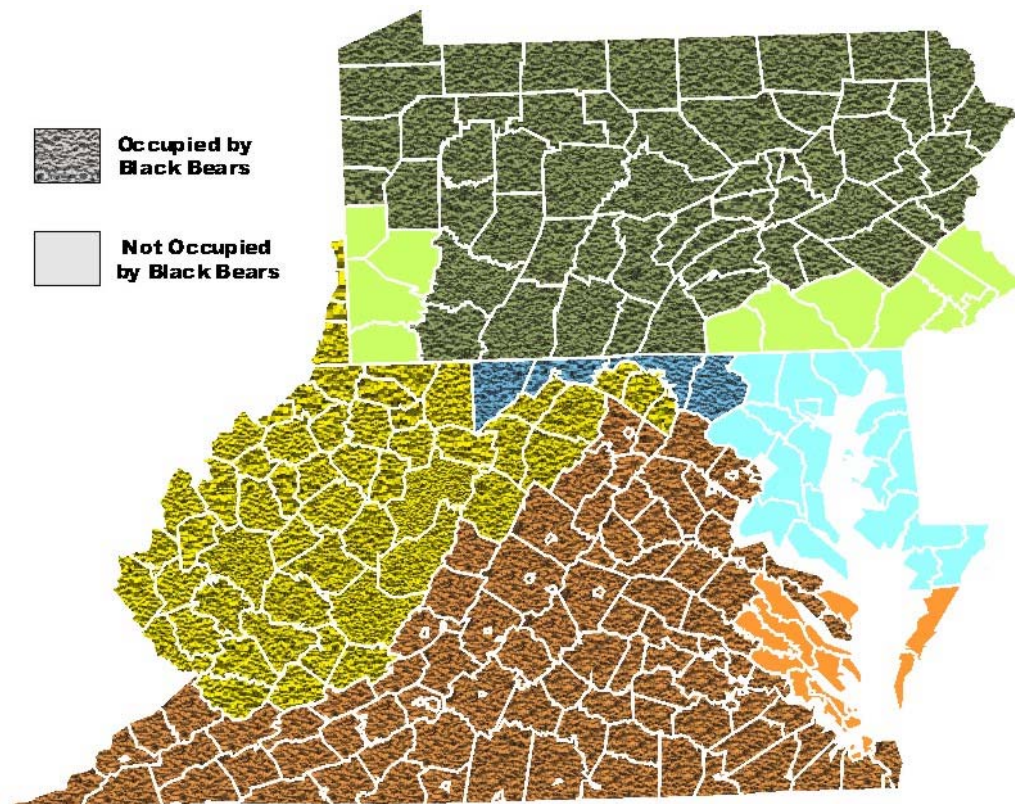


Figure 1. Occupied black bear range in Maryland, Pennsylvania, Virginia, and West Virginia in 2003 (source: Maryland DNR, Pennsylvania Game Commission, Virginia Department of Game and Inland Fisheries, West Virginia Division of Natural Resources).

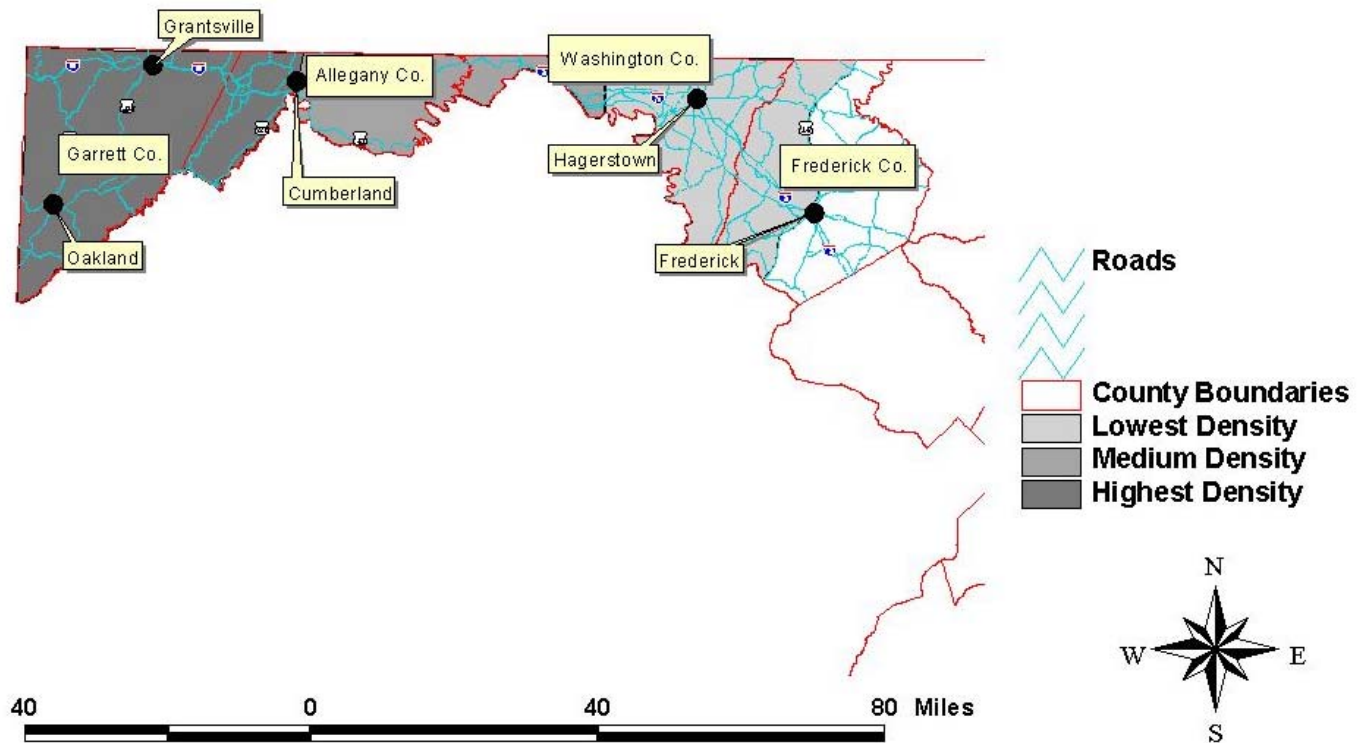


Figure 2. Occupied black bear range and relative density in Maryland.

Physical Description

The black bear is a large animal with small, rounded ears, dark fur, and a short tail. While there are many color phases of black bears (including black, cinnamon, blonde, brown, and occasionally blue or white) across their North American range, black is the most common color in Maryland and across the eastern United States (Burch 1997). Black bears commonly have a brown or tan muzzle and occasionally have a white or yellowish blaze on their chests, usually in the shape of a 'V'.

The size of black bears varies greatly according to sex, age, and the quality of available habitat. Male bears are typically larger than female bears. Adult bears usually weigh between 125 and 400 pounds, although bears weighing 600 pounds or more are not uncommon (Burch 1997).

History of Black Bear Management in Maryland

The black bear is a species native to Maryland that was once distributed statewide (Mansueti 1950). Bears were historically abundant because of the excellent habitats provided by Maryland's native woodlands, meadows, swamps, and coastal plain. The black bear population suffered, though, as European settlers colonized Maryland.

The quality of Maryland's forests was degraded as early settlers cleared the forests to harvest timber and expand agricultural land during the 1600s and 1700s. As a result, the quality of bear habitat was also greatly degraded. In addition, settlers considered bears to be a threat to their own existence and treated them as vermin. In fact, in the mid 1700s, a bounty was

established in Somerset and Worcester counties encouraging people to kill bears. Bears were indiscriminately killed throughout the 1800s and into the early 1900s (Garner and Mathews 1992a). This indiscriminate killing, combined with large-scale habitat loss through uncontrolled timber cutting and a lack of conservation laws, eliminated black bears and other forest wildlife species from many parts of the state.

By the early 1900s, loss of habitat had restricted black bears to the western portion of the state. By the mid 1960s, the black bear population was nearly extirpated and was restricted to the more remote mountainous areas of Allegany and Garrett counties (Paradiso 1969). In 1972, the status of the black bear was changed from that of a “forest game” animal to being listed on the state “endangered species” list (Annotated Code of Maryland, Article 66 C. Section 125).

Throughout the mid 1970s and 1980s, the Wildlife and Heritage Service (WHS) noted an increase in bear sightings and bear damage complaints. As a result, the black bear was removed from the state “endangered species” list in 1980 and listed as a “nongame species of special concern”. In 1985, the status of the black bear was once again changed from a nongame species to a forest game species (summarized in Garner and Mathews 1992a). Hunting seasons remained closed.

III. STATUS OF MARYLAND’S BLACK BEAR POPULATION

Wildlife biologists use annual surveys to monitor trends in bear populations over time. WHS uses a variety of these surveys to track the state’s black bear population, such as a scent station survey, bear observations, mortalities, annual reproduction and the number of nuisance complaints received per year. In addition to these annual surveys, DNR has conducted two population estimates since 1990.

Population Estimate

Estimating the size of wildlife populations is among the most challenging tasks that wildlife managers undertake. Populations of animals with large home ranges, like bears, are extremely difficult to estimate using mark-recapture techniques (Garshelis 1992). Dateo (1997) estimated the mean annual female black bear home range size in western Maryland to be 35.5 km² (13.6 mi²). Likewise, the mean annual male black bear home range was estimated to be 43.3 km² (16.6 mi²) in a southern Appalachian black bear study (Powell et al. 1997).

In 1991, DNR conducted an intensive mark-recapture study in an effort to estimate the size of Garrett County’s bear population. In conducting the study, DNR trapped bears on public lands in Garrett County. Upon examining the capture and recapture rates of trapped bears, DNR estimated that Garrett County supported between 0 and 167 black bears, with a point estimate of 79 bears (12.0 bears per 100 mi²) (Garner and Mathews 1992b).

In 2000, DNR once again undertook the large task of estimating the size of Maryland’s black bear population. Advances in DNA analysis technology gave DNR’s wildlife managers a more efficient means of sampling the bear population and providing reliable results. Hair snares, consisting of a baited area surrounded by barbed wire, were distributed throughout Garrett and western Allegany counties on both public and private lands during the summer of 2000. Due to the height of the barbed wire placed around the bait sites, cubs of the year were not subject to being sampled by this study. Therefore, only adult and subadult bears were included in the population estimate. Hair samples were collected by the barbed wire as bears approached the bait. Follicles from the collected bear hairs were then subjected to DNA analysis and subsequently used to identify individual bears. Capture-recapture data analysis was applied and used to estimate Maryland’s black bear population (Bittner et al. 2002).

The black bear population in 2000 in western Maryland (from Cumberland to the West Virginia line) was estimated to be between 166 and 337 animals, with a point estimate of 227 adult and sub-adult bears (27.3 bears per 100 mi²). This demonstrated a 127.5% increase in the density of black bears from 1991 to 2000 in western Maryland when comparing the mean densities calculated in each population study (from 12.0 bears per 100 mi² in 1991 to 27.3 bears per 100 mi² in 2000).

Recognizing that Maryland has a resident bear population that extends east into Frederick County, WHS conservatively estimated that there were an additional 100 bears east of Cumberland. This additional estimate was based on known sightings of sows with cubs, single bears, and other reports. Therefore, Maryland's bear population was conservatively estimated to be between 266 and 437 adult and sub-adult bears in the summer of 2000. Maryland's black bear density estimate of 27.3 bears per 100 mi² was similar to southwestern Pennsylvania's estimated density of 21.7 bears per 100 mi² in Fayette, Somerset, and Westmoreland counties that lie adjacent to Garrett County, Maryland (Bittner et al. 2002).

Scent Station Survey

The black bear scent station survey is used to document population trends in black bears. While it cannot be used to accurately estimate the size of a black bear population, it can be used to track trends in the bear population over time. The scent station survey has been conducted in Maryland since 1993.

Scent station survey routes are established across known portions of the black bear range in the 4 western counties and are repeated annually. Each route consists of 4 or more bait stations located 0.5 miles apart. A bait station consists of bait (sardines in oil) hung from a tree. The survey routes are established in mid to late July and checked 8 days after establishment for black bear activity. Activity is defined as claw marks, bear scat, bear tracks, damaged bait cans or any other bear sign near the bait station. Visitation rates are then calculated and used to compare results between years.

A good index to the bear population trend in Maryland's core bear range is to evaluate those routes that have been conducted for at least 5 years, censoring the routes in peripheral bear range. This includes all 21 routes in Garrett and Allegany Counties and shows an increase in visitation rates from 3.2 % in 1993 to 38.3% in 2004 (Fig. 3). In Garrett County, the visitation rate has increased from 3.9% in 1993 to 54.5 % in 2004 (Fig. 4). The results of this survey indicate that the black bear population has increased substantially in western Maryland since 1993 (MD DNR, unpublished data).

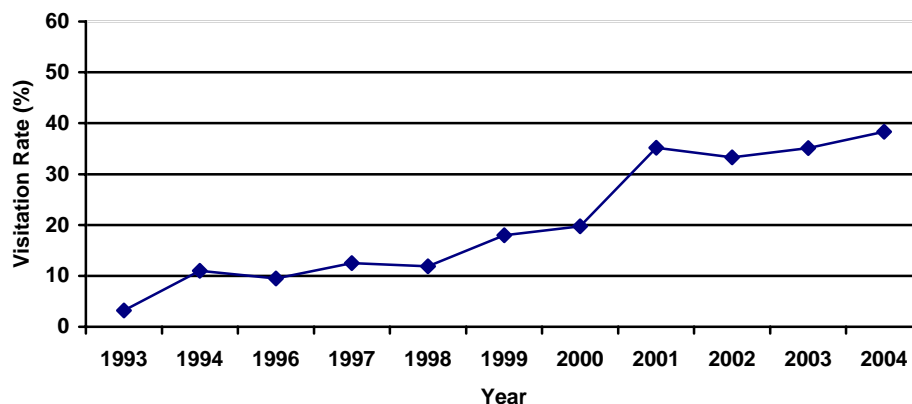


Figure 3. Western Maryland scent station survey results of all routes conducted 5 years or more (1993-2004).

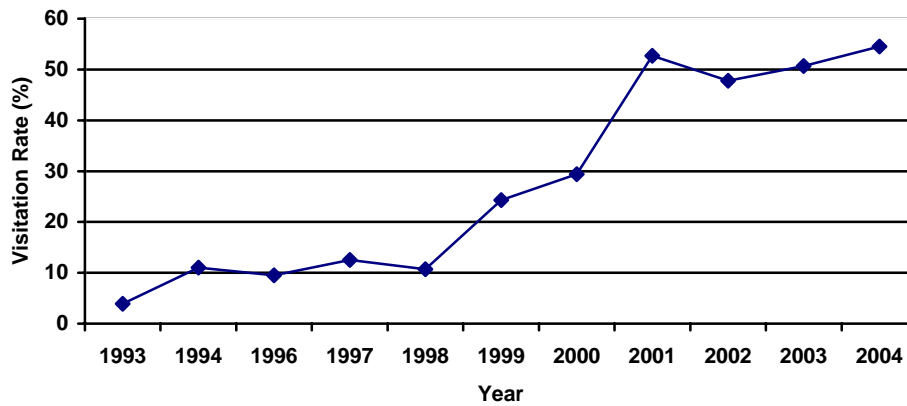


Figure 4. Garrett County scent station survey results (1993 – 2004).

Mortality Survey

DNR has been monitoring black bear mortality in Maryland since 1981. These data provide another means of monitoring population trends over time. In 1985, there were no known bear mortalities in Maryland while in 2003 there were 57 known black bear mortalities (MD DNR, unpublished data) (Fig. 5, Appendix D). The average number of known bear mortalities per year since 1985 is 16.8 compared with an average of 39.0 per year over the last 5 years (1999-2003) (Appendix D).

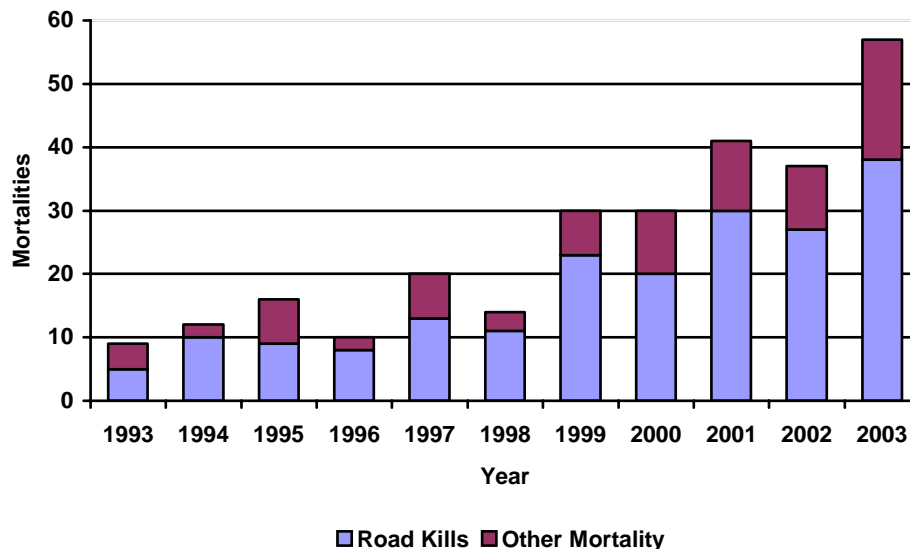


Figure 5. Black bear mortality in Maryland (1993-2003).

Bear vehicle collisions, the most common cause of known bear mortalities in Maryland, have averaged 10.2 road kills per year since 1985 compared with an average of 27.6 road kills per year over the last 5 years (1999-2003). One other noteworthy mention is the increase of bear mortalities east of Cumberland, outside Maryland's traditional core bear habitat. Since 1998, there have been 38 known bear mortalities east of Cumberland.

While it is recognized that many factors may influence the increase in bear mortality (e.g. increasing bear population, increasing traffic on roadways, increased human activity in bear

habitat, etc.), it is reasonable to presume that the increase is due in part to an expanding and/or increasing black bear population.

While the Annual Average Daily Traffic (AADT) has increased in western Maryland, the rate of increase has been slower than that of the increasing black bear/vehicle collision rate compared over the same time period (Fig. 6). Data obtained from the Maryland State Highway Administration (SHA) demonstrates an AADT increase of nearly 21% between 1995 and 2003 at 2 continuously monitored traffic sites in Garrett County (I-68 at MD 546 and Rt. 219 at Deep Creek Lake). These data were collected at sites along 2 of Garrett County's busiest roadways in areas where bears have been known to die in bear/vehicle collisions. While traffic rates appear to have increased nearly 21% between 1995 and 2003 along these Garrett County roadways, black bear mortalities resulting from bear/vehicle collisions in Garrett County have increased 283% over the same time period (from 6 in 1995 to 23 in 2003).

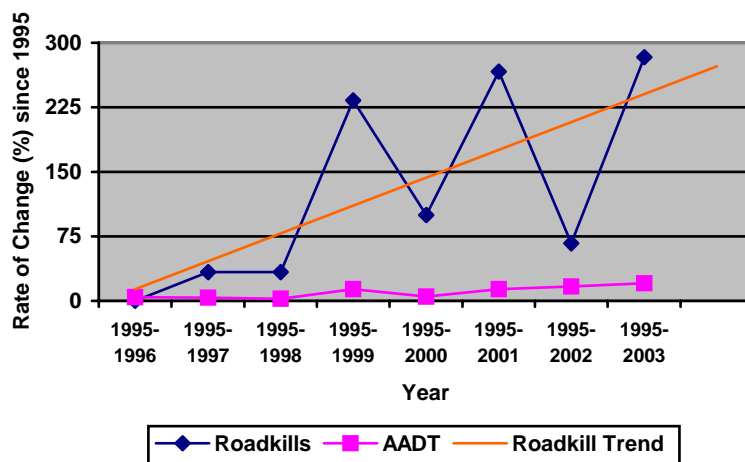


Figure 6. Percent rate of increase in Annual Average Daily Vehicular Traffic (AADT) and black bear roadkills on Garrett County roadways (1995-2003).

Black Bear Sightings

Since 1980, DNR has been recording black bear sightings across the state. In 1993, bear sightings had become so common in Garrett County that DNR stopped recording observations there. Elsewhere in western Maryland, bear sightings are becoming more frequent and people are more accustomed to seeing them. Every year, bears are spotted in the 4 western counties and even in the central and southern regions of the state. Bear sightings can increase due to many factors including an increase in the number of bears, multiple sightings of an individual bear in populated or nontraditional areas and increased seasonal movements due to factors such as limited natural food supplies, breeding activities, etc.

In the spring and summer seasons, dispersing juvenile bears have been seen traveling through Montgomery, Carroll, Harford, Howard, and Baltimore counties as they search for a place to establish a home range of their own. In 1980, 27 bear observations were reported to WHS, all from western Maryland (Garrett, Allegany, Washington, and Frederick counties). By contrast, 79 bear sightings were reported in 2003, not including Garrett County. Twenty-nine of these sightings came from areas east of Allegany County. In addition to Allegany County, black bear sightings were recorded in Washington, Frederick, Montgomery, Carroll, Howard, and Harford counties in 2003.

Except in Garrett County, where bears are known to occupy all areas of the county, DNR continues to solicit black bear sightings from the public. Maintaining a record of black bear sightings outside of the traditional core range of black bears in Maryland can prove valuable in

monitoring the range expansion of bears into nontraditional habitats. Maintaining sighting records can also be an effective tool for wildlife managers in the nontraditional bear range to use in tracking the movements and activities of bears in the region, allowing DNR to more effectively handle any human/bear encounters that may arise.

Nuisance Complaints

Black bears are intelligent, opportunistic feeders that have large home ranges. They occupy habitats that are also inhabited by humans. As black bear and human populations have increased, so have black bear nuisance complaints. DNR has been keeping track of nuisance complaints since 1984, when 8 complaints were logged. In recent years, however, DNR has logged hundreds of complaints per year. The most recent data reflects 417 complaints logged by DNR in 2003 (Fig. 7).

WHS categorizes nuisance complaints according to the nature of the complaint. Bears in trash, birdfeeders, and agricultural crops are the most common nuisance complaints received by WHS. In fact, 21% of the nuisance complaints received between 1998 and 2003 were trash-related, 19% involved bears raiding birdfeeders, and 11% concerned bears damaging agricultural crops (Fig. 8). The ‘other’ category in the figure below includes calls regarding bear/vehicle collisions, bears in campgrounds, bears sighted in trees near residences and other various complaints that don’t fall into the primary categories.

Recording nuisance complaints helps DNR manage the growing and expanding black bear population by providing important information and trends to wildlife managers. For example, trash and birdfeeder complaints have remained relatively stable in Garrett County over the last several years (since 2000). The fact that these common complaints have stabilized while other population monitoring tools reveal an increasing black bear population trend suggests that Garrett County residents are becoming more ‘bear aware’. They have taken measures to prevent these common human/bear interactions by implementing techniques to minimize bear interactions. However, total nuisance complaints in Garrett County continue to rise. A 35% increase in nuisance complaints was recorded in Garrett County between 2002 and 2003, while a 65% increase has been seen in Garrett County nuisance complaints since 2000 (DNR, unpub. data). This indicates a shift in the types of calls being received by DNR from the common trash and birdfeeder calls to the potentially more serious public safety, agricultural damage, and pet and livestock calls.

Allegany County has also seen a marked increase in nuisance complaints over the last several years. Allegany County nuisance complaints have risen 53% between 2002 and 2003 (211% increase since 2000) (DNR, unpub. data). Recording this data allows DNR to gauge human/bear interactions in previously unoccupied bear range as bears expand their range eastward.

In recent years, nuisance complaints have been recorded further east beyond Maryland’s traditional bear range. In 2003, nuisance complaints were recorded in Garrett, Allegany, Washington, Frederick, and Montgomery counties. In March 2004, a 325 lb. adult male black bear was trapped in Cecil County after killing three domestic rabbits and raiding trash and birdfeeders.

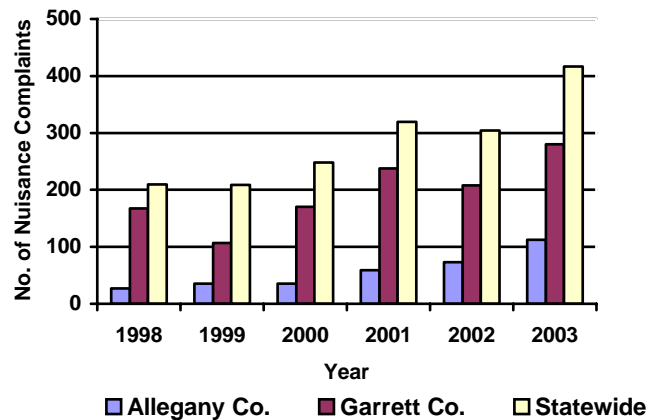


Figure 7. Number of nuisance bear complaints received by DNR (1998-2003).

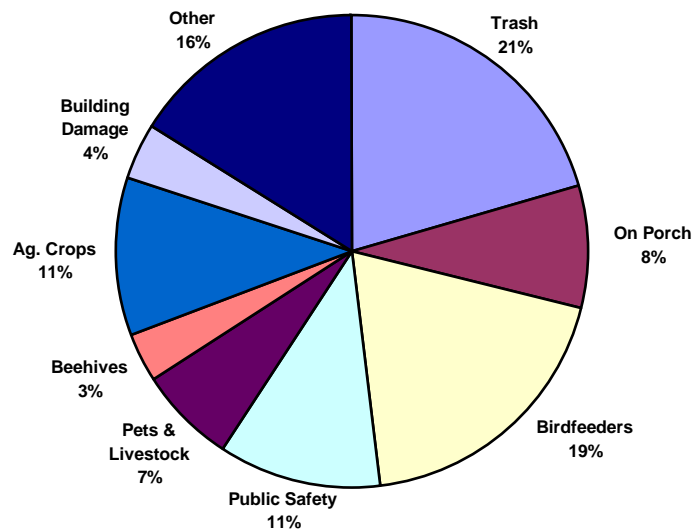


Figure 8. Nuisance bear complaints by category (1998-2003).

Reproduction Survey

DNR has been monitoring adult female black bears fitted with radio transmitters since the mid 1980s. Information gathered from these bears is used to determine home range size, habitat use, and reproductive rates. Since 1986, the study has recorded 150 cubs born to 49 sows, for a long-term average of 3.1 cubs per sow. This high reproductive rate is indicative of the high-quality black bear habitat that exists in western Maryland and the Mid-Appalachian region.

The study has also shown that sows in Maryland have been bred as early as 1½ years old, have produced litter sizes ranging from 1 to 4 cubs, and reproduce every 2 years. Cubs in Maryland have at least a 50% survival rate to their first birthday. Several of the bears that have been marked as cubs have been documented traveling into nearby states and establishing territories there. These movements have illustrated the regional nature of Maryland's bear population.

IV. BEARS AND HUMANS

Black bears have proven to be much more adaptable than previously believed. It was once thought that black bears required large, contiguous tracts of forest, uninterrupted by human activity in order to survive. We have since learned that black bears not only survive in a landscape filled with human activity, but can thrive in these conditions. This adaptability creates a new set of challenges for wildlife professionals who manage black bear populations.

People have mixed opinions about bears. Bears are intelligent, charismatic, and strong animals capable of causing considerable damage. This combination of qualities leads some people to view an increased number of bears as good news, while others feel just the opposite. For example, those interested in recreationally viewing the animals are generally happy about the increased population. However, those who have suffered bear damage, like some farmers, may be disheartened over the increasing bear population.

Black Bears – A Valued Resource

Possibly no other eastern wildlife species can reflect the true feeling of wildness better than the black bear, often capturing the imagination of people. Encounters with bears are remembered and retold to friends and family for years to come. Even though many Marylanders have never seen a bear in the wild, there is an intrinsic value that people hold in knowing that they have the opportunity to see a bear in the wild. In fact, 93% of 831 respondents to the 2004 public opinion survey agreed that black bears should be preserved in Maryland for future generations to enjoy. Eighty-four percent stated that they derive satisfaction just knowing that bears exist in Maryland, even though they may never see one in the wild (Appendix E). Their pleasure may lie simply in knowing that black bears are present in a native ecosystem that supported these animals centuries ago.

Each year wildlife watchers set out to observe bears in their natural settings. Even the image of a bear may draw tourists. In fact, many businesses in western Maryland use an image of a black bear as an icon to attract tourists.

Black bears are an important component of our natural ecosystem. They are considered an umbrella species, meaning that since black bears use such a diversity of habitats throughout their annual lifecycle, their presence or absence can be used as an indicator to identify a particular component of the habitat that may be missing or degraded.

Public Opinion

Black bears are an enigmatic species, and public perception plays a very important role in their management. Different people and groups view bears in many different ways. There are generations' worth of folk tales and preconceived beliefs that need to be dispelled when managing black bears. Therefore, it is important that wildlife managers not only consider the biological needs of the species, but also consider the limits imposed on the bear population by society.

The number of bears the public will tolerate in a given area is a concept referred to as Cultural Carrying Capacity (CCC) and is dynamic by nature. Black bear CCC is ever-changing based on factors such as the frequency and intensity of nuisance bear encounters, the number of bear sightings in an area, public education, etc.

One objective in the 1992 Black Bear Management Plan was to determine the perceptions, desire, and attitudes of people in Maryland concerning black bears and to enable the public to provide input on the bear management program. DNR has worked diligently over the years to include public input in its black bear management efforts. In addition to several public

forums, two black bear task forces have been formed since the 1992 plan was implemented. A 1995 task force was convened and charged with providing recommendations to DNR regarding nuisance bear damage. In 2002, DNR formed a Black Bear Task Force (BBTF) to review DNR's 1992 Black Bear Management Plan and to provide guidance in developing DNR's next black bear management plan. The BBTF, comprised of citizens from across Maryland, met until early in 2003 while it studied bear issues in the state and solicited input from the public regarding bear management (Appendix B).

The 2002 BBTF recommended that DNR conduct a statewide public opinion survey to gauge the attitudes of Maryland's citizens regarding black bears and black bear management (Appendix C). In Spring 2004, DNR contracted with Responsive Management of Harrisonburg, Virginia to conduct a statewide public opinion survey of Marylanders' attitudes towards black bears and black bear management.

Responsive Management conducted the survey in June 2004, polling 831 Maryland residents regarding bear management in the state (Duda 2004). Although the survey was conducted statewide, respondents were grouped by region enabling a regional variation in responses to be determined. The survey results often showed a regional difference in response, suggesting that those people living in Maryland's occupied bear range often have opinions and attitudes regarding bears that vary from the rest of Maryland's citizenry.

Respondents were asked questions about their contacts and experiences with black bears, attitudes toward black bears, strategies to avoid black bear nuisance behavior, and their opinions of regulated black bear hunting and other lethal forms of population management. Some mentionable results of the survey include (Appendix E):

- Respondents feel very strongly that bears have the right to live in Maryland (90%) and that future generations should be able to enjoy this resource (93%), even if they never get the opportunity to see a bear.
- While 77% of respondents support having bears in Maryland, only 52% support having bears in their county. Fifty eight percent oppose having bears within ½ mile of their home. However, those who live with bears appear to be more tolerant of them than those that do not live with them, as evidenced by the 53% of Western Region respondents' support of having bears within ½ mile of their homes.
- When asked about the abundance of bears in Maryland, a regional disparity was evidenced. Fifty five percent of respondents felt bears were rare in Maryland, while 32% felt they were common to abundant. However, 77% of Western Region respondents felt bears were common to abundant.
- Fifty percent of the respondents felt the bear population in their county was at the right level and only 4% felt it was too high. In the Western Region, 53% of the respondents felt the bear population was too high in their county, while 35% felt it was at about the right level, suggesting that CCC has been reached or exceeded in the Western Region (Garrett and Allegany counties).
- Ninety eight percent of respondents have not had problems with bears in the past 2 years. However, in the Western Region (occupied bear range), 24% of the respondents have had problems with bears in the past 2 years.
- Ninety two percent of the respondents support the strategy of requiring people that visit or live in bear habitat to practice good sanitation practices and trash management. However, only 64% of the respondents favor requiring these people to use bear-proof trash and food containers, while 54% support prohibiting the use of birdfeeders and other wildlife feeding activities.
- Sixty five percent of respondents support regulated hunting as a way to manage black bear populations. In western Maryland, however, support for hunting extends to 78%.

Through this survey, DNR has gained valuable insight into public opinions regarding bears and bear management among Marylanders. The results of this important survey will help to ensure DNR continues managing black bears in a socially acceptable manner.

Information and Education

As people become educated about bear biology and behavior, public acceptance of bears tends to increase, resulting in an increased CCC. Therefore, educating the public about bears may have a greater effect on bear management than any other management effort DNR undertakes.

A goal identified in the 1992 10-year management plan resulted in DNR undertaking an aggressive black bear information and education program. DNR staff routinely conducts public presentations about black bears. These presentations cover such topics as black bear biology, behavior, and nuisance avoidance techniques. The programs have been conducted for elementary school classes, local civic groups such as Rotary, Lions, 4-H, etc. These occur not only in the core bear area in Garrett County, but also in other parts of Maryland where bears are currently non-existent or are only occasional transients. DNR also has several black bear education trunks that may be borrowed by teachers and youth groups interested in teaching young people about black bears. The education trunks contain an informational slide show and video, educational activities for students, and other educational materials.

Workshops for rental real estate agencies in western Maryland have been conducted in an attempt to educate tourists visiting bear habitat. Printed materials have been distributed and programs for tourists have been conducted. These programs have proven successful, drawing a lot of interest from tourists. For example, DNR directly contacted over 1,800 Garrett County tourists in 2003 by attending realty-sponsored tourism events.

In 1999, a standardized “Living With Black Bears” slide show was developed and distributed to all state parks in western Maryland for use in their campfire programs. In addition to the slide shows, 4 Maryland Public Television (MPT) videos about black bears have been produced for educational use, with the most recent airing in July 2004. Many press releases about bear biology and behavior continue to be distributed to Maryland print and radio media.

DNR prints and distributes several educational items designed to inform residents about bear behavior and nuisance avoidance techniques. The most popular of these items is a full-color, eight-page pamphlet entitled “Maryland’s Bear Country-Learning to Live with Black Bears”. Over 45,000 of the bear brochures have been disseminated since the first printing in 1998. Other pamphlets, posters and magnets designed to inform people on how to avoid nuisance situations have also been distributed. These items have been distributed to residents living in bear habitat, and to those experiencing nuisance bear damage.

Black Bear Nuisance Resolution

While the information and education component of Maryland’s black bear management program takes a proactive approach to minimizing human/bear conflicts, nuisance situations still occur and need to be addressed accordingly. As the black bear population has increased, human/bear conflicts have also increased. Nuisance black bear behavior is a complex issue that requires a complex and creative approach on behalf of DNR and those citizens who live in bear country. As bear numbers have grown, there has also been an increase in the human population, an increase in traffic along Maryland’s roadways, and an increase in urban sprawl in and around occupied bear habitat. These all play a role in creating potential black bear nuisance situations.

Also, WHS and other public service agencies have increased the amount of manpower and funds expended to resolve nuisance bear situations. Although WHS is the lead agency

Black Bear Management Plan

dealing with nuisance bear resolution, other agencies also receive nuisance calls from the public and have assisted WHS when possible. WHS regularly receives assistance with nuisance bear complaints from the following agencies: DNR Police, State Forest and Park Service, Maryland State Police, county emergency management agencies, local police agencies, University of Maryland county extension offices, U.S. Department of Agriculture, and others. DNR conservatively estimates that over \$67,000 in WHS manpower, materials, and associated costs was expended in 2001 while responding to nuisance black bear calls. This estimate does not include costs to other agencies that assisted DNR or reimbursement to farmers for bear-related agricultural damage.

Each spring WHS holds a series of workshops for other DNR and public service agencies that may receive nuisance bear calls. At these workshops, attendees learn about the status of black bears in Maryland, bear biology and behavior, and guidelines on how to handle specific nuisance calls. These agencies are often the first point of contact for the public. They also receive instruction on how, when, and who to contact regarding issues that they may not be able to resolve.

Black Bear Nuisance Response Plan

In 1996, DNR developed and implemented its Black Bear Nuisance Response Plan. This plan streamlined DNR's response to nuisance bear situations, providing guidelines on how to handle specific nuisance situations. The plan has been revised and updated as new methods of nuisance abatement have been developed and implemented. The plan is distributed throughout DNR and other agencies that may receive nuisance bear calls. Agency response to nuisance black bear situations has been standardized since implementation of the plan, resulting in better nuisance abatement and customer service.

In 1997, a black bear response team was established in Garrett County to provide a more efficient response to nuisance bear complaints. The response team provides emergency assistance from April through November 24 hours a day, 7 days a week. From April through November 2003, response team members responded to more than 80 after-hours calls regarding nuisance black bears. Response team members are equipped with pagers, cellular phones, firearms, vehicles, specialized training and other equipment needed to respond to black bear emergency situations. Often, they are the first person on the scene, and this specialized equipment provides the tools necessary to resolve most nuisance bear situations.

Avoidance/Exclusion

The most effective means of preventing nuisance bear situations is by avoiding human/bear encounters. DNR offers technical assistance to those looking for ways to minimize human/bear encounters. By taking a few precautionary measures, many nuisance bear situations can be prevented. People living in or visiting bear habitat can reduce their chances of experiencing nuisance bear behavior by simply eliminating the attractants that may draw bears close to human dwellings and activities. Good sanitation practices and trash management are key concepts to consider in avoiding nuisance bear activity. A few examples include scheduling frequent trash pick-up, eliminating any wildlife feeding activities (including birdfeeders), eliminating outside pet food storage, regularly cleaning barbecue grills and picnic/camping areas, and confining livestock to secured buildings and pens during times of increased bear activity.

A proactive approach to handling potential nuisance situations is to physically prevent bears from obtaining access to various attractants by the use of exclusion devices. Bear-proof trash containers and food storage containers may be used to deter bear activity at homes or campsites. Trash-raiding bears have been the major nuisance bear complaint in Maryland since

WHS began recording nuisance complaints in the mid 1980s. Nuisance complaint data and information from the 2004 public opinion survey suggest that residents in Maryland's core bear range have learned how to exclude bears from their trash cans. Bear-proof trash cans have become commonplace in areas of Garrett County, and some newer residential developments require new homes to use bear-proof trash containers.

Electric fencing is an exclusion device that can be very effective in mitigating nuisance bear situations. While installing electric fencing around large agricultural fields can be cost prohibitive, electric fences are very effective when installed around small area attractants, such as apiaries, trash collection sites, buildings, and smaller orchards. In fact, DNR provides electric fencing materials free of charge to beekeepers experiencing black bear damage to their hives. In order to receive the free fencing materials, the beekeeper must enter into a "Bear Deterrent Fence Agreement" with DNR, agreeing to be responsible for properly constructing and maintaining the fencing materials.

Repellents

While bear repellents may be effective in abating nuisance behavior in specific situations for the short-term, there is little hope for use of bear repellents as long-term nuisance control measures. Noise, lights, pyrotechnics, guard dogs, and chemical compounds have all proven to be effective bear repellents in specific situations. Bears can often be frightened from an area by shouting, clapping, banging pots and pans, or using noisemakers such as whistles or air-horns. The use of lights and dogs around human dwellings and livestock can be an effective way to keep bears away, as well. Bears are intelligent animals, though, that may become accustomed to certain repellents over time (e.g. lights), therefore reducing the effectiveness of the repellent.

Capsaicin spray is a repellent that has been used effectively on black bears. The spray is for use at close range (up to 30 feet), and is effective in situations where bears and humans come in close contact (Hygnstrom 1994). Capsaicin sprays are often recommended to outdoor enthusiasts hiking and camping in bear habitat. Capsaicin sprays are available commercially and designed to be applied directly in the face of a bear. When purchasing capsaicin spray as a bear repellent, people should be careful to buy sprays intended for use on bears.

Black Bear Rehabilitation

Black bears occasionally suffer injuries in the wild. These injuries may or may not be the result of human activity. Some causes of black bear injuries reported to DNR in the past include bear/vehicle collisions, falls from trees, illegal shootings, and encounters with other animals. When DNR receives a report of an injured bear, an immediate assessment of the situation is made. Public safety and the animal's welfare are considered by DNR personnel when deciding the best course of action to take in these situations.

Black bears are very resilient and can recover from many injuries, some of which may be severe. When feasible, DNR lets the animal recover on its own. Rehabilitation of individual bears in Maryland is not an issue of concern from a population perspective, considering the recent increase in Maryland's bear population.

DNR personnel may euthanize severely injured bears when it is unlikely that the animal will recover. Often, it is impractical to move the animal to a remote area where recovery would be more likely.

Rehabilitation of injured bears can be costly. Rehabilitating bears involves chemically immobilizing the animal, transporting it to a facility where it can receive the proper veterinary care, caring for the animal during recovery (which may take up to several months), and transporting the bear back to a suitable release location. There are many direct and indirect costs

involved (including man-hours, transportation costs, veterinary costs, etc.). Though costly, immobilization and rehabilitation of injured bears may be considered in certain situations (e.g. a severely injured research bear wearing a radio collar).

Abandoned/Orphaned Cubs

Occasionally, bear cubs become orphaned, often as a result of human intervention. Well-intentioned people occasionally pick up or report a lone cub that they believe has been abandoned. Usually, these people are not aware that female black bears routinely leave their cubs as a natural defense against predation. Bears may send their cubs up a tree and leave them for several hours at a time. Educating the public about bear behavior and getting people to leave an “abandoned” cub alone is usually the most effective and practical solution in these situations.

In the event a cub is abandoned, DNR personnel will make a reasonable effort to reunite the cub with its maternal sow. In the event the cub and sow cannot be reunited, DNR may place abandoned cubs with a “foster” sow, a technique that has been used previously in Maryland and has been shown to result in successful cub adoptions in Pennsylvania (Alt 1984). As the bear population increases, DNR will monitor any trends in the frequency of abandoned cub reports. When applicable, a suitable sample of sows may be radio-collared to serve as “foster” sows. Since 1995, and as recently as March 2004, DNR has successfully placed 10 abandoned cubs with “foster” sows that were already caring for litters of cubs of similar age.

Trap & Transfer

Trap and transfer (translocation) programs are used by many states, such as Pennsylvania, Connecticut, and Michigan to mitigate nuisance bear behavior (Etter et al. 2003, Rego 2003, Terner 2003). Trapping and transferring nuisance bears has been an effective means of nuisance abatement under certain circumstances (McArthur 1981, McLaughlin et al. 1981). Wildlife managers must take many factors into account when trapping and transferring nuisance bears. The age of the animal, the area of nuisance behavior, and the area where the animal is released may all have implications for the success of the translocation. The desired outcome of the translocation should be considered before using this as a conflict resolution tool.

Translocation may be an effective solution if the desired outcome is to remove an individual bear from a particular nuisance situation. However, if the desired outcome is to halt nuisance activity by an individual bear or to eliminate nuisance activity in a particular area, then translocation may not produce that outcome. Relocated bears may continue to exhibit nuisance behavior at the release location if not relocated to a remote area. Other resident bears may also continue to perpetuate a nuisance situation at the capture site if proper precautions aren't taken to avoid human/bear encounters and reduce attractants.

Increased mortality of relocated bears has been documented due to various factors such as bear/vehicle collisions and hunting mortality precipitated by the bears' increased movements after release at a new site (Massopust and Anderson 1984, Mark Terner-PA Game Commission, pers. comm.). Relocated bears may attempt to return to their original home range or may increase movements while trying to learn a new territory. Young, subadult bears are less likely to return to their capture site after translocation than adult bears, but may be susceptible to the aforementioned mortality factors as they explore new habitats.

Some research has suggested that relocated bears should be moved at least 40 miles in order to decrease the likelihood of the animal returning to the capture site (Alt et al. 1977, Rogers 1986). Relocating the animal across a substantial geographic obstacle, such as a large river, mountain range, or swamp may also help to keep the animal from returning to the nuisance area (Hygnstrom 1994).

Bears should be released in an area containing suitable black bear habitat to increase the likelihood of a successful translocation (VDGIF 2002). However, translocating nuisance bears is often not a feasible solution. Limited available habitat, the likelihood that bears will return to the capture area, and the intolerance of humans to bears are all factors that affect the success of these efforts.

Bear Damage Compensation

Black bear damage compensation programs are not a common form of conflict resolution among states with black bear populations. Only 12 states and provinces in North America had bear damage compensation programs in 1997 (Wagner et al. 1997). As a result of legislative action, Maryland's black bear damage compensation program has been in effect since 1996.

In Maryland, a Bear Conservation Stamp and related materials, priced between \$5 and \$85, are sold to generate funds to reimburse farmers for agricultural damage caused by bears. Reported annual bear damage has ranged from \$10,389 to \$50,524 since 1996. Reimbursement is provided to agricultural producers suffering at least \$200 worth of agricultural damage. The maximum amount of reimbursable damage is capped at \$3000 per farmer per year. If there are inadequate funds available to fully compensate farmers, reimbursement is prorated and split among all of the eligible damage claims. The fund has not been able to fully reimburse farmers to date, and payment has ranged between 12% and 70% of total claims. Therefore, not all farmers eligible for compensation have claimed damage due to concerns over the lack of funding available for reimbursement.

Aversive Conditioning

Aversive conditioning is a behavior modification tool used by DNR and other wildlife agencies throughout North America to change the nuisance behavior of problem bears. Aversive conditioning provides negative feedback to problem bears in an effort to discourage individual bears from repeating undesirable behaviors.

Aversive conditioning methods employed by DNR include the use of capsaicin spray applied to the face of a bear at close range, noise making pyrotechnics fired in the direction of an offending bear, and non-lethal rubber projectiles (buckshot and slugs) fired from a shotgun at the well-muscled portions of problem bears. Currently, only trained, qualified employees of DNR (WHS, Natural Resources Police, and State Forest and Park Service) are authorized to aversively condition nuisance bears. While recent literature regarding aversive conditioning is limited, use of aversive conditioning techniques by wildlife agencies seems to have increased in recent years. For example, New Jersey and Michigan currently use aversive conditioning protocols as part of their nuisance management procedures (Carr and Burgess 2003, Etter et al. 2003).

The effectiveness of aversive conditioning depends on several factors. First, the desired outcome must be considered. The objective of the aversive conditioning event may be to get an individual bear to leave a particular nuisance situation (e.g. flee from a campsite). On the other hand, the objective may be to alter the bear's long-term behavior (e.g. teach the bear not to repeat the offensive behavior). These are 2 different goals and it is difficult to quantify the results of the aversive conditioning efforts with respect to the desired outcome. Recent research has suggested that aversive conditioning may not be effective at getting bears to alter their long-term behavior patterns (Beckman 2004, Lyons 2004)

Often, bears are aversively conditioned after being trapped at a nuisance site. There is concern that this may cause bears to become trap-shy, making it difficult to re-trap an offending bear in the future (Patrick Carr-NJ Department of Environmental Protection, pers. comm.) The effectiveness of aversive conditioning may also depend on the availability of natural food

sources and the level of reward gained by repeating nuisance behaviors. While aversive conditioning has shown promise as a conflict management tool in certain situations in Maryland, there have been a few individual bears that have continued to repeat nuisance behaviors in spite of multiple aversive conditioning episodes. DNR has euthanized problem bears when aversive conditioning has not worked to resolve situations where public safety is a concern.

Depredation Permits

Bear depredation (kill) permits can be an effective means of eliminating specific nuisance bears, especially those causing agricultural damage. Many states make use of depredation permits, allowing citizens suffering bear damage to kill the offending bear (Conover and Decker 1991). Currently, DNR does not issue depredation permits. However, in cases of severe damage, DNR has the authority to euthanize repeat offending bears. It can be cost prohibitive for DNR to conduct this activity, thus depredation permits become a more cost effective technique to resolve specific damage situations.

The public opinion survey administered in 2004 revealed that respondents generally support the use of depredation permits to control nuisance bear situations. Fifty seven percent of the respondents supported the use of depredation permits for black bears that cause damage to livestock or pets. Approval of depredation permits dropped to 44% for black bears causing damage to personal property or crops. However, a majority of Western Region respondents approved of using depredation permits for controlling bear damage to both pets and livestock (82%) and personal property and crops (75%) (Appendix E).

V. BLACK BEAR MANAGEMENT OPTIONS

There are a variety of management options used by wildlife management agencies to regulate black bear population numbers. Different management options are used to achieve different population goals. Multiple options may be implemented simultaneously to achieve specific management results across a broad or specific area. These options may be used to alter biological carrying capacity or to achieve cultural carrying capacity by either stabilizing the population or allowing the population to increase or decrease.

Passive Management

Passive management, or allowing nature to take its course, is a management option that enables the black bear population to increase at the maximum growth rate allowed by biological factors. This management option may be favorable in areas where bear densities are low and a higher black bear population and expanded range are desirable. Over time, passive management would allow a population to reach biological carrying capacity. It is likely, however, that the population would first reach cultural carrying capacity due to the increasing number of human-bear encounters associated with growing black bear populations.

Habitat Management

Habitat can be manipulated through various habitat management techniques, including the application of silvicultural treatments and prescribed burnings to improve the quality of habitat available for bears. Habitat can be manipulated to increase food availability, denning, and escape cover to meet the year-round habitat requirements of bears (Weaver 2000). The quantity and quality of suitable travel corridors can also be improved via habitat manipulation, thereby increasing the biological carrying capacity of the habitat available to bears.

Habitat manipulations require a lengthy period of time for the habitat to respond favorably after manipulation. For example, an area of forest that is clearcut will produce abundant seasonal soft mast food items and thick escape cover for bears, but typically takes 2-3 years in western Maryland to start providing those resources (Ernie Metz-MD DNR Forest Service, pers. comm.). Therefore, habitat management is not a practical population management tool used to achieve a population level consistent with CCC. Instead, habitat management can be used to improve the quality of available habitat across the landscape in consideration of landscape issues such as habitat fragmentation and corridor availability.

Regulated Hunting

Regulated hunting is a widely used population management tool for black bears. Regulated hunting can be used to achieve a black bear population level consistent with CCC. While the concept of hunting often generates emotional debate among members of the public, it remains a popular and cost-effective population management tool among jurisdictions with black bear populations. In fact, all of Maryland's neighboring states with black bear populations (Pennsylvania, Virginia, West Virginia) rely on hunting as their primary means of black bear population management. In the June 2004 public opinion survey, a majority of all respondents (65%) supported regulated hunting as a way to control black bear populations in Maryland. Support is even higher in Western Maryland (78%). In fact, when questioned about public support of hunting, 78% of all respondents supported hunting if they knew the bear population would not be endangered (Appendix E).

Hunting seasons can be structured to meet conservative or liberal harvest objectives, allowing black bear populations to increase, decrease, or be stabilized. This can be accomplished by adjusting hunting season parameters, such as season length and timing, bag limits, legal method of take, and zoning of hunting areas.

Regulated bear hunting is implemented to address biological goals and the social impacts of a black bear population. Meanwhile, the examination of hunter-harvested bears offers the biologist important biological information that can be used to monitor the population. Sex and age data, general body condition, and reproductive status are just some of the data routinely sampled from examining bear carcasses collected during a hunting season.

Immunocontraception/Sterilization

Immunocontraception and sterilization, or fertility control, has been suggested as a management tool to reduce black bear numbers. Currently, however, the technology and methods are not available to make fertility control a viable option for population control in free ranging black bear populations (Fraker 2003). There is no current FDA approved fertility control agent available for use on bears, and it is unlikely any will be developed in the near future (Fraker 2003). Gaining approval for the use of fertility control agents is a costly and time-intensive process, whereby the drug sponsor must provide substantial evidence of a drug's effectiveness through controlled studies. The safety of the target species must be proven before FDA approval will be given, and there is likely not a large enough market to make development of a drug approved for use on bears fiscally worthwhile to the drug sponsors. While not a practical population management tool at the current time, fertility control research is ongoing, and may have more practical population management implications in the future.

VI GOALS, OBJECTIVES and STRATEGIES

This black bear management plan identifies management goals and objectives regarding Maryland's black bear resource for the period 2004-2013. Specific strategies have been developed to aid in obtaining these long-term management goals and objectives. The following goals, objectives and strategies are based on input from DNR wildlife biologists, the 2002 Black Bear Task Force, and public comments received.

Goal 1 – Population Viability:

Ensure the long-term viability of Maryland's black bear population through comprehensive research and monitoring.

Objective 1. To maintain Maryland's black bear population at a level compatible with land use goals and acceptable social limits (at cultural carrying capacity). CCC can fluctuate and is not a static value.

The goal of maintaining or achieving long-term population viability in Maryland should be prioritized even when CCC is exceeded. "Minimum viable bear population levels may exceed CCC objectives, especially in areas with high human densities. In these situations, long-term viability of bears may depend on recognizing potential human-bear problems. Increased knowledge and better understanding of bears could lead to increased public tolerance of bears (i.e. raise CCC nearer to the minimum viable population level.)." (VDGIF 2002)

Strategies:

- Determine by periodic survey and other means the CCC for black bears throughout Maryland. CCC may vary locally within a given region of the state; therefore management consideration should be given to local and regional factors affecting CCC.
- Involve public input and collaboration into bear management decision-making processes.
- Employ an integrated wildlife damage management approach in meeting CCC utilizing the full range of nuisance and population management tools available to WHS. Methods of nuisance abatement should be implemented in consideration of the best interests of Maryland's citizens and Maryland's bears.

Objective 2. Use "Regulated Hunting" to achieve and maintain the black bear population at a level compatible with land use goals and to minimize potential nuisance bear situations.

Strategies

- Use a regulated hunting approach to slow the growth of the black bear population in Maryland's core black bear area.
- Consider the effects of hunting on those directly involved in the hunt. For example, landowner and citizen conflicts with bear hunting activities should be minimized (e.g. restricted hunting opportunities at popular wildlife viewing areas, private land trespass issues considered, etc.).
- Increase hunting opportunities over time as an integrated wildlife damage management approach if the black bear population increases beyond CCC or if range expansion into urban areas of Maryland is imminent.
- Determine the appropriate hunting techniques to be implemented in Maryland.

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- Implement a bear hunting license/stamp to generate revenue that will be used to help finance the cost of black bear management in Maryland.
- Ensure that black bear hunting methods in Maryland are fair and sportsmanlike and conform to the ethics of “fair chase.”

Objective 3. To maintain a current understanding of the viability of Maryland’s black bear population.

Strategies

- Continue to monitor black bear population trends throughout occupied range through existing surveys and develop new surveys as they become available and appropriate.
- Conduct a black bear population survey at least every 5 years using state of the art techniques, beginning in 2005.
- Continue to monitor the reproductive status of Maryland’s bears via radio telemetry.
- Determine juvenile bear survival and dispersal rates.
- Conduct research to refine home range estimates for female and male bears.
- Conduct research to monitor bear/human interactions that may positively or negatively impact CCC.

Goal 2 – Habitat Conservation and Management:

Consistent with bear population objectives, conserve black bear habitat in Maryland, maximizing the quantity and quality of habitat available to the bear population. Conservation emphasis should be given to areas of special significance, such as travel corridors, wetlands, and other areas frequented by black bears.

Objective 1. Develop a Black Bear Habitat Conservation Plan in partnership with government agencies and private landowners.

Strategies

- Partner with large, private landowners to conserve and protect critical bear habitat.
- Implement bear habitat management techniques on public lands in western Maryland.
- Monitor and assess changes in existing habitat across an evolving Maryland landscape.
- Initiate progressive programs that identify and protect bear habitat.

Objective 2. Monitor outdoor recreational and development demands that negatively impact bear habitat, and implement strategies to mitigate these impacts.

Strategies

- Work with DNR’s Nature Tourism Program to ensure that critical bear habitat is not impacted by increased recreational events in western Maryland.
- Initiate a working relationship with western Maryland governments to ensure that future planning and tourism efforts do not negatively impact critical bear habitat in the region.

Goal 3– Human-Bear Conflicts:

Promote human safety, protect agricultural income, protect personal property, and address conflicts between humans and bears.

Objective 1. Prioritize black bear education and information programs within DNR.

Strategies

- Continue an aggressive education campaign to inform the public on black bear life history, habitat, and behavior.
- Remain vigilant in teaching residents and tourists what can be done to minimize conflicts with bears.
- Develop creative information dissemination venues, utilizing a variety of different media (including print, radio, television, etc.).
- Reinforce the message that black bears are large, wild animals and can be dangerous in certain situations.

Objective 2. Provide training programs for public agencies that are first responders to situations involving people and bears.

Strategies

- Conduct annual training sessions on handling nuisance bear situations for all public service agencies in western and central Maryland.
- Expand training opportunities in areas where bears are not yet established, but where bears are expected to become present within the next 10 years.
- Update DNR’s black bear nuisance response plan to include a thorough section on how to respond to a human injury caused by a bear. Incorporate all public emergency response agencies.
- Publish guidelines that will advise the public to treat bear encounters with extreme caution.

Objective 3. Develop a conservative, dynamic approach to hunting black bears in an effort to ensure conservation of the black bear resource while offering relief to human-bear conflicts.

Strategies

- Establish and modify bear hunting techniques (such as methods of hunting, timing and length of hunting seasons, the number of hunting permits issued, geographic zoning, etc) to achieve various population and nuisance management goals.
- Employ systematic monitoring of the bear population for regional abundance and sex and age composition to evaluate the impacts of a hunting program on the desired population objective.
- Utilize biological data collected from harvested black bears to aid in population monitoring and modeling efforts.

Objective 4. Work with local communities, homeowner’s associations, civic groups, etc. to minimize human-bear conflicts.

Strategies

- Increase educational programs regarding nuisance bear avoidance with an emphasis on proper sanitation and waste management techniques, including the use of bear-proof trash receptacles, etc.
- Explore the feasibility of implementing statutory and/or regulatory actions that would require the use of bear-proof trash receptacles and limiting wildlife-feeding activities (e.g. birdfeeders, squirrel feeders, etc.).

Objective 5. Facilitate the implementation of DNR's Black Bear Nuisance Response Plan.

Strategies

- Investigate new human-bear conflict resolution tools and techniques and incorporate appropriate methods, making revisions to the Plan as necessary.
- Provide the necessary information and training to WHS and other agency personnel responsible for responding to black bear nuisance situations in accordance with the Plan.

Objective 6. Continue to respond in a timely manner to nuisance bear complaints.

Strategies

- Maintain a thorough database of nuisance activity so that any developing trends regarding nuisance activity may be identified.
- Monitor the effectiveness of DNR's Black Bear Response Team. Implement new nuisance abatement technology as it becomes available and incorporate these techniques into the Action Plan of the Black Bear Response Plan.

Objective 7. Develop a black bear damage permit system that would allow individuals experiencing ongoing and severe damage to kill individual offending animals in the most humane manner possible.

Strategies

- Develop regulations that will implement a damage permit system as part of an integrated wildlife damage management approach to resolving nuisance bear situations.
- Coordinate the damage permit system with NRP in consideration of law enforcement issues.

Goal 4 – Public Values and Recreation:

Ensure that public values are considered in various bear management scenarios, and that alternative forms of recreation are incorporated into Maryland's bear management schemes.

Objective 1. To consider public values and recreational needs when implementing various bear management options.

Strategies

- Determine the perceptions, desires, and attitudes of people in Maryland concerning black bears by conducting public attitude surveys and monitoring local and regional forums for public comment (e.g. newspaper editorials, etc.).

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- Provide opportunities for the public to have input into the bear management program. Public understanding and support are imperative for an effective management plan.

Objective 2. Increase recreational hunting opportunities as a part of an integrated wildlife damage management approach while remaining within the limits of CCC and maintaining population viability.

Strategies

- Consider the impact that hunting methods may have on people other than those directly involved in the hunt. For example, landowner and citizen conflicts with bear hunting activities should be minimized (e.g. restricted hunting opportunities at popular wildlife viewing areas, private land trespass issues considered, etc.).
- Ensure that black bear hunting methods in Maryland are fair and sportsmanlike and conform to the ethics of “fair chase.”
- Maintain the bear population level at CCC and continue an aggressive information and education program so that the public may continue to enjoy popular outdoor activities (e.g. hiking, bird watching, etc.) in a safe and enjoyable environment.

Objective 3. Continue to provide non-consumptive recreational opportunities, allowing citizens to maintain the opportunity to view and experience wild black bears in western Maryland.

Strategies

- Maintain the black bear population at a level that will continue to provide black bear viewing opportunities in western Maryland.
- Implement conservative harvest goals throughout Maryland’s bear range, relying upon regulated hunting to allow local bear populations to grow in suitable habitat with low bear densities while stabilizing growth in areas of suitable habitat with higher bear densities.
- Inform the public regarding black bear life history, how to live with black bears, and other pertinent topics that encourage the public to recreate in Maryland’s bear country safely and responsibly.

Goal 5 – Animal Welfare

Ensure that all aspects of Maryland’s bear management program are conducted in a professional and humane manner.

Objective 1. To ensure that Maryland’s bears are treated humanely.

Strategies

- Consider the humane treatment of bears in all aspects of black bear management (research, conflict resolution, etc.).
- Investigate all reports of inhumane activities regarding bears and seek prosecution when possible.
- Provide training to other agencies that may be first responders to incidents involving bears on how to humanely and expeditiously handle bear situations.

Goal 6 – Funding Black Bear Management in Maryland

Provide funding mechanisms to support the attainment of black bear management goals and objectives.

Objective 1. To develop additional funding sources for Maryland’s bear management program.

Strategies

- Use revenue generated from a bear-hunting program as a funding source for the bear management program.
- Abolish the current Black Bear Conservation Stamp Program once a bear-hunting program and depredation permit system are implemented. All compensation to landowners for agricultural bear damage would be eliminated.
- In the event that a black bear hunting season is not implemented, identify additional funding sources to provide 100% compensation for bear-related agricultural damage.

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Appendix A

**MARYLAND DEPARTMENT OF NATURAL RESOURCES
BLACK BEAR MANAGEMENT PLAN
1992-2001
SUMMARY OF ACTIVITIES**

Introduction

In January of 1992, the Maryland Department of Natural Resources (DNR) released the Black Bear Management Plan. Prior to developing this plan, the Wildlife & Heritage Service (WHS) conducted a series of public meetings across Maryland in an effort to gauge public opinion towards the bear resource in the state. Many of the issues raised were incorporated into the plan development process.

The black bear is a species that generates serious discussion in western Maryland. Since the development of the 1992 plan, black bears have continued to spread eastward in Maryland. Bear populations also appear to have increased in density in Garrett County. This increasing bear population has resulted in additional concerns being expressed by western Maryland residents, as well as those who are experiencing bears for the first time.

The Black Bear Management Plan reviewed the past history of this species in Maryland. It presented factual information regarding ongoing research activities. It also provided a listing of major goals and objectives, as well as the strategies to be employed to meet these objectives. Following is a summary of the activities that have taken place in an effort to meet these goals and objectives.

Goals – 1992

- 1) To manage the black bear as a native wildlife species in western Maryland where suitable habitat exists and is compatible with other land uses.
- 2) To manage the black bear resource for the purpose of providing recreational opportunities for the citizens of Maryland.

Objectives - 1992

- 1) To promote black bears as an integral part of the ecosystem and to inform the public about ways to avoid problems with black bears.
- 2) To determine the perceptions, desire, and attitudes of people in Maryland concerning black bears and to enable the public to provide input on the bear management program.
- 3) To minimize bear-human conflicts by helping the public cope with nuisance bear problems in a manner that will be effective and have minimal adverse impact on the bear population.
- 4) To promote the hunting of black bears for the purpose of providing quality public recreational opportunities and as a means to manage the bear population at a level consistent with CCC.
- 5) To estimate parameters that influence the dynamics and ecology of black bear populations in western Maryland.

Black Bear Management Plan

- 6) To determine both quantitative and qualitative habitat requirements for black bears in western Maryland and to develop habitat management guidelines for implementation on private lands and particularly state and federally owned and managed lands.
- 7) To obtain an annual index of abundance of black bears in western Maryland.
- 8) To develop a simulation model of the bear population in western Maryland and begin collecting data for use in that model.

DNR staff, especially western Maryland field staff, has dedicated a large amount of time to managing the black bear resource since this plan was implemented. Some of these activities have been very successful, and the major accomplishments are listed under each objective. A summary of these activities follows.

Objective 1 - Information and Education

Although the objectives are not listed in any priority order, this objective probably has the largest impact on the status of bears in the state. Informing and educating people about bears can lead to an increased tolerance of these animals. Providing information on ways to avoid or minimize bear-human conflicts would familiarize people with bears, thus reducing the chance of human or bear injuries.

Different strategies were identified and utilized to meet this objective. In western Maryland, WHS staff have routinely made public presentations on black bears. These presentations cover basic bear biology, behavior, and nuisance avoidance techniques. Elementary school children have been the primary focus of these presentations, but additional presentations have been made to local civic groups like the Rotary and Lions Clubs, as well as any group that requests such activities.

A standardized slide show on black bears was developed in 1999 and distributed to all of the state parks in western Maryland for use in their campfire programs. Monthly articles about bear biology and activities were written in 1998 and 1999 for distribution to the western Maryland print media. Selected news releases have been distributed to the media to provide additional information on bears. Four Maryland Outdoors segments for MPT were filmed regarding black bears in the state, most recently in 2004. Numerous interviews with radio, television and print media have been conducted in an effort to provide information about bears. Black bears have even been the featured topic at DNR's tent at the Maryland State Fair.

Several printed items have been produced for distribution in bear country. The most popular has been "Maryland's Bear Country-Learning to Live with Black Bears," a full color pamphlet that was developed in 1996 and was distributed to anyone experiencing bear problems. It has also been used as a general information tool. Posters have been distributed to rental real estate offices in Garrett County for use in rental properties. These posters explain to renters what they should and should not do to impact bears while visiting Garrett County. Information regarding bears was also distributed to the Garrett County Chamber of Commerce for distribution and display at the new Garrett County Visitors Center.

Workshops were conducted in 1998 with rental real estate agencies in Garrett County to promote the distribution of information to tourists regarding black bear nuisance situations. In addition, a workshop was held in 1998 for Garrett County residents on ways to live with bears.

Objective 2 - Public Opinion Surveys

This objective stated that attitudes of the public needed to be determined regarding black bears and their management. Various meetings have been held across the state to gauge people's attitudes towards bears. Written and verbal correspondence is received almost daily regarding the management of this species. Letters to the editors of western Maryland papers are monitored to gauge public opinion. Newspaper editorials, articles and outdoor columns are also monitored in an effort to determine the current public opinion.

A statewide public opinion survey on bear management has not been conducted. However, a local public opinion survey was conducted in 1996, when Garrett County farmers were surveyed regarding bear damage to agricultural crops. This survey was part of the process for the Black Bear Conservation Stamp Program.

The 1995 Bear Task Force looked at financial losses suffered by landowners as a result of bear damage. That group's recommendations were presented at 4 public forums held across the state. Statewide attitudes towards bears were collected at that time, although the focus of that Task Force was more specific in nature than the broad subject of bear management.

Objective 3 - Nuisance Bear Management Guidelines

This objective stated that nuisance bear management guidelines would be established and implemented in western Maryland. A Nuisance Black Bear Response Plan was developed and implemented in 1996. This plan streamlined DNR's response to nuisance bear situations. It provided guidelines to specific situations, and has been extremely helpful in identifying areas where improvements were warranted. This plan has been revised and updated, resulting in improved efficiency in responding to bear complaints. In Garrett County, a bear response team has been established and is on call 24 hours per day from April through November. In addition, wildlife staff in the 4 western counties are available to handle emergency bear situations at any time.

Annual meetings and training sessions are held with all the public service agencies in western Maryland (911 centers, local and state police, animal control agencies, etc.) in an effort to provide them with the latest nuisance bear information. These meetings have resulted in a more coordinated response to emergency bear situations, and have expedited bear calls getting to the appropriate DNR agency. In recent years, the meetings have been expanded to include personnel from central Maryland as well.

Objective 4 - Establish a bear hunting season

A black bear hunting season has not been implemented in Maryland. Black bear hunting has not occurred in the state since 1953. In 1995, the Black Bear Task Force recommended to DNR that a limited bear-hunting season be implemented to control the bear population and to provide revenue that could be used to reimburse landowners for bear damage. The Task Force's recommendations were discussed at 4 statewide public meetings. Comments received at these meetings, as well as written comments, were overwhelmingly opposed to initiating a bear hunting season at that time. The hunting season recommendation was not approved.

In 2000, the Maryland Sportsmen Association presented the Wildlife Advisory Commission (WAC) with a bear hunting season proposal. The WAC reviewed this request, approved it and recommended to the Secretary of DNR that a limited bear hunting season be implemented in western Maryland. The Secretary reviewed this recommendation, and stated that no bear hunting would occur through at least 2002. Public comments were numerous regarding this proposal, and opinion was divided on this subject.

Objective 5 - Bear population dynamics

Black bear population estimates were scientifically determined in 1991 and 2000. The 1991 bear population for Garrett County was estimated to be 79 bears, with a 95% chance that it was between 0-167. In 2000, the bear population from Cumberland to the West Virginia line was estimated to be 227, with a 95% chance that it's between 166-337. This represents an area larger than that which was surveyed in 1991, but still documents an increase in bear numbers.

Allegany County represented 21% of the study area. Reducing the 2000 population estimate by 21% would provide a minimum population estimate for Garrett County. Using the 2000 data, the bear population in Garrett County would then be 179, ranging from 133 - 270, a 178% increase from 1991. However, bear habitat in Garrett County is of a higher quality than that found in western Allegany County, and bear densities per square mile are higher in Garrett County because of this quality habitat.

Various research to gather biological information on black bears has been done in western Maryland since 1991. Reproductive data have been collected by radio collaring females and tracking them to den sites. Between 1986-2000, 39 sows have produced 114 cubs for an average of 2.92 cubs/sow. Also, these cubs have a 56% survival rate to one year of age. No information is available on survival rates beyond the cub age class.

Several types of data have been collected in an effort to monitor the bear population. All known mortalities are recorded, as are sightings reported by the public. Since 1985, mortalities have increased from 0 to 30 in 2000. An average of 21 bears have died annually from various causes each of the last 5 years.

Sightings outside of Garrett County have also increased. In 1980, 16 bear sightings were reported outside of Garrett County. That has increased to an average of 83 sightings since 1996. Bear sightings have become more numerous east of Allegany County in the last 5 years.

As bear populations have increased, nuisance bear problems have also increased. However, the increase in nuisance complaints cannot be directly related to bear populations. Many factors play into the amount of nuisance complaints, ranging from natural food shortages to human encroachment into bear habitat. Nuisance bear complaints have increased from only a handful in the early 1980s to more than 500 in 2000.

Objective 6 - Identification of habitat requirements

Specific black bear habitat data are readily available from research performed throughout the range of this species. In Maryland, specific habitat parameters were identified by Webster (1994) and Dateo (1997) as part of their Master's Degree projects at Frostburg State University. These research projects not only classified black bear habitat in Garrett County, but also determined seasonal and annual home ranges for radio-collared females. Preferred habitats on a seasonal and annual basis were also determined, and the relationship between females and these habitats was discussed in detail. The total amount of primary bear habitat was identified in Garrett County through this work.

Also, in 2000, a Gap Analysis Program (GAP) was performed to identify potential bear habitat across Maryland. Habitat requirements were identified, and various Geographic Information System (GIS) layers were screened to identify potential bear habitat in Maryland. Only one area outside of western Maryland was identified as containing potential bear habitat. That area includes the Pocomoke State Forest area in Worcester County.

Specific habitat management recommendations have not been formulated. Bears are extremely adaptable, and can utilize any areas that contain large amounts of forestland. Research has shown that bears utilize different areas for den sites, such as brush piles, rock piles, hollow

trees, rhododendron thickets and the like. Protective cover and feeding areas depend on available sources, with the adaptability of these animals determining the use of these areas.

Natural food supplies may be the most variable habitat element in western Maryland. Late spring frosts can drastically affect the volume of natural foods like berries and nuts. Acorns are a preferred bear food, and when in short supply, cause bears to seek alternate foods. This will often bring bears, as they search for adequate foods, in closer contact with people. Since acorns are an important wildlife food, the WHS annually conducts a mast survey to determine the amount of acorn production. It is important that this information be maintained on an annual basis, as the trend in acorn production may also be related to cub production (more acorns, more cubs produced). Other mast crops like apples, cherries, beechnuts and hickory nuts are also monitored in an effort to identify food supplies for these forest dwelling animals. Our surveys have determined that acorn production is highly variable, and can go from boom to failure in one year.

Objective 7 - Population trend monitoring

Ideally, an annual index of abundance of black bears is critical to the proper management of this species. However, this is very difficult to determine for large ranging animals such as bears. One promising technique is the bait station survey, which utilizes selected routes that are baited with sardines. This survey is conducted annually in Garrett and Allegany counties. Initially established in 1993, only 3.2% of all bait stations were visited by bears. By 2000, the visitation rate had increased to 24.2%. According to this index, the bear population has increased, but the magnitude of increase cannot be determined from this index alone.

Objective 8 - Population modeling

Specific population models have not been developed. Population estimates have been conducted as noted above. Simulation models can be developed, but not until additional biological information is collected.

SUMMARY

The black bear is a species that fosters myriad reactions from people. While it is generally believed that black bears are a wilderness species, it is becoming apparent that bears will also co-exist with human influences. Movement of human populations into more remote landscapes has brought humans deeper into the bear's world and the resiliency of bears allows them to survive in today's world.

DNR has been closely monitoring black bears since it became apparent that resident populations had become established in the late 1970s. Specific research has been conducted, and population estimates were calculated using state of the art techniques.

The 1992 management plan set the stage for the last 10 years of work. It's quite apparent that business as usual may not be warranted in the future. Innovative ideas and cutting edge techniques may be the way of the future for bear management in Maryland.

Appendix B

2002 Black Bear Task Force Membership Roster

- 1.) Valerie Connelly, Maryland Farm Bureau
- 2.) Tom Rooney, Maryland Sportsmen Association
- 3.) Nancy Railey, Garrett County Rental Real Estate Agents
- 4.) Brad Frantz, Garrett County Emergency Management
- 5.) Michael Markarian, The Fund for Animals
- 6.) John Hadidian, The Humane Society of the United States
- 7.) Peggy Gosnell, Private citizen (Accident)
- 8.) George Falter, Jr. Private citizen (McHenry)
- 9.) Gary Fratz, Maryland Wildlife Advisory Commission
- 10.) Dr. Ron Barry, Department of Biology, Frostburg State University
- 11.) Jerry Zembower, Allegany-Garrett Sportsmen Association
- 12.) Tom Mathews, DNR Wildlife Biologist –Retired

Note: Mr. Brooks Hamilton, Garrett County Farm Bureau served as an alternate for the Maryland Farm Bureau.

Appendix C

2002 Black Bear Task Force Recommended Goals and Strategies for inclusion in Maryland's Black Bear Management Plan for 2004 (Submitted to DNR March 28, 2003)

Goal 1 – Population Viability:

To ensure the long-term viability of the black bear population in Maryland through comprehensive research, monitoring, management, education, and protection programs.

Goal 2 – Maximizing Cultural Carrying Capacity (CCC):

To maintain black bear populations throughout Maryland at the maximum CCC level. CCC can fluctuate and is not a static value. (Note: The public attitude survey will be a key consideration in determining CCC).

“CCC is the maximum number of bears in an area that is acceptable to the human population. The CCC is a function of the human tolerance to bears and the benefits people derive from bears. It is different for each constituency, location, and point in time. Development of bear population management objectives to meet the CCC are subjective and involve a combination of social, economic, political, and biological perspectives“ (VDGIF 2002).

The goal of maintaining or achieving long-term population viability in Maryland should be prioritized even when CCC is exceeded. “Minimum viable bear population levels may exceed CCC objectives, especially in areas with high human densities. In these situations, long-term viability of bears may depend on recognizing potential human-bear problems. Increased knowledge and better understanding of bears could lead to increased public tolerance of bears (i.e. raise CCC nearer to the minimum viable population level)“ (VDGIF 2002).

Strategies:

- Determine by periodic survey and other means the CCC for black bears for each county.
- Employ an Integrated Wildlife Damage Management approach in meeting CCC. This would include a systematic and comprehensive approach to identify and determine the nature and severity of damage and prioritize solutions on a scale of least to most invasive or injurious to the animal causing damage.

Goal 3 – Habitat Conservation and Management:

To conserve black bear habitat in Maryland, consistent with bear population objectives and with emphasis on areas of special significance.

Strategies:

- Initiate progressive programs that identify and protect bear habitat.
- Develop a Black Bear Habitat Conservation plan in partnership with county governments with a goal of preserving, protecting, and conserving bear habitat.
- Monitor outdoor recreational demands that negatively impact bear habitat, and implement strategies to mitigate these impacts.

Goal 4– Human-Bear Conflicts:

To promote human safety, protect agricultural income, protect personal property, and address conflicts between humans and bears in such a way that maximizes CCC.

Strategies

- Create a comprehensive black bear management plan that identifies information and monitoring needs and establishes conflict resolution strategies to ensure that a prioritized progression from non-lethal to lethal approaches are mandated. Hunting should be considered only after an acceptable plan that establishes and documents its need as a wildlife management tool to attain CCC.
- Prioritize black bear education and information programs within the DNR, and to continue an aggressive public education campaign to educate the public on black bear life history, habitat, and bear behavior. DNR needs to remain vigilant in teaching residents and tourists what they can do to minimize conflicts with bears. This information should be disseminated in the school systems and at highway rest areas, billboards, flyers to be handed out at State Parks, signs at campsites, via public service announcements, etc.
- Provide training programs for public agencies that are first responders to situations involving people and bears, e.g. training in aversive conditioning techniques.
- Encourage local governments to enact ordinances to mandate or provide incentives for the use of bear-proof trash containers in residential areas, developments, and tourist areas where bears have become acclimated to trash as a food source.
- Establish procedures under which individual problem bears are handled. These procedures should categorize bear behavior into that which requires no action to that warranting destruction of an individual. These procedures may include non-transferable permits to individuals experiencing ongoing and intolerable damage to kill individual offending animals in the most humane manner possible.
- Continue to respond in a timely manner to nuisance bear complaints, and maintain a database to ascertain any trends that may be developing. DNR needs to revamp its reporting and record keeping relative to reported bear complaints and make this information readily available to the public.
- Encourage DNR to work with public safety agencies to develop an emergency plan to be implemented in the extremely rare event of a black bear attack on a human. Personnel who are first responders to these situations need to be adequately trained and have the proper equipment to dispatch a bear.
- Encourage DNR to include in its messages that bears are wild and their behavior is unpredictable. Although extremely rare, attacks on humans have occurred in North America, and bears are capable of inflicting serious injuries and death. Guidelines should be published that advise the public to treat bear encounters with extreme caution.

Goal 5 – Bear Hunting:

To include black bear hunting in an Integrated Wildlife Damage Management Approach to reduce human-bear conflicts and as a means to attain CCC.

Strategies

- Use “Regulated Hunting” to target nuisance bears and to achieve and maintain the desired population objective i.e. CCC. Adjustments to length and timing of season and methods of take will be used to manipulate the magnitude, sex composition, and age composition of the harvest.
- Employ systematic monitoring of the bear population for regional abundances and sex and age composition to evaluate the impacts of a hunting program on the desired population objective i.e. CCC.

Goal 6 – Ethics of Bear Hunting Methods:

To ensure that black bear hunting methods in Maryland are fair and sportsmanlike and conform to the ethics of “fair chase.”

Strategies

- Consider humane issues when deciding methods of take. The following bear hunting techniques should not be permitted: baiting, use of dogs, and spring hunting.

Goal 7 – Landowner and Citizen Conflicts with Bear Hunting:

To ensure that bear hunting activities are consistent with and respect the rights of private property owners and other Maryland citizens.

Goal 8 – Non-hunting Recreation:

To provide opportunities for non-hunting recreation associated with bears in Maryland with a focus on information and education designed to minimize negative human-bear interactions.

Goal 9 – Public Values:

To consider public values when implementing various bear management options.

Strategies

- Determine the perceptions, desires, and attitudes of people in Maryland concerning black bears and to enable the public to provide input on the bear management program. Public understanding and support are imperative for an effective management plan.

Goal 10 – Animal Welfare

To ensure that all aspects of Maryland’s bear management program are conducted in a humane manner.

Strategies

- Consider the humane treatment of bears in all aspects of black bear management.
- Investigate all reports of inhumane activities regarding bears and prosecute.
- Train and equip Law Enforcement Officers to euthanize injured bears.

Goal 11 – Funding the Bear Management Program

To provide funding mechanisms to support the attainment of black bear management goals and objectives.

Strategies

- Use revenue from bear hunting licenses and permits, etc. as a funding source for the bear management program. If a bear hunting program is initiated, the task force recommends that the State of Maryland no longer provide monetary compensation to landowners for bear damage.
- In the event that a bear hunting program is not initiated, the Task Force recommends that the State of Maryland provides 100% compensation for eligible bear damage claims. The Task Force suggests that DNR request a \$50,000 annual appropriation from the General Assembly as a source of funding for bear damage compensation.
- In the event that a bear hunting program is not initiated, the Task Force encourages the General Assembly to pass legislation to discontinue the sale of Black Bear Conservation Stamps as a revenue-generating program for the bear damage compensation program. The current investment in this program (time, energy, manpower and materials) is greater than the revenue generated.
- The General Assembly should authorize new avenues of funding that would be directed to the DNR for the purpose of black bear management, research, education, habitat protection and conflict resolution.
- Hunting license revenues and federal excise taxes on sporting arms and ammunition provide the primary funding source for wildlife management in Maryland. In the event that a regulated bear hunting program is not initiated, DNR should change the classification of the black bear from a “Game” to a “Non-game” species. At the same time, hunting license revenues should no longer be used as the primary funding source for bear management.

Appendix D

**BLACK BEAR MORTALITY IN MARYLAND
1985-2003**

YEAR	ILLEGAL	ROAD KILL	OTHER	UNKNOWN	TOTAL
1985	0	0	0	0	0
1986	2	2	0	0	4
1987	3	2	0	0	5
1988	0	2	1	1	4
1989	3	1	2	0	6
1990	1	4	0	0	5
1991	1	8	1	0	10
1992	3	5	1	0	9
1993	1	5	1	2	9
1994	2	10	0	0	12
1995	4	9	2	1	16
1996	0	8	1	1	10
1997	3	13	1	3	20
1998	2	11	1	0	14
1999	3	23	2	2	30
2000	7	20	2	1	30
2001	4	30	3	4	41
2002	1	27	3	6	37
2003	10	38	3	6	57
TOTAL	50	218	24	27	319

Appendix E

PUBLIC ATTITUDES TOWARD BLACK BEAR MANAGEMENT IN MARYLAND

2004

Responsive Management National Office

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EXECUTIVE SUMMARY

INTRODUCTION AND METHODOLOGY

This study was conducted for the Maryland Department of Natural Resources (DNR) to determine residents' opinions on black bear management in Maryland. Respondents were grouped by region:

Region	Counties within Region
Western	Allegany, Garrett
Mid-Western	Washington, Frederick
Central/Southern	Howard, Carroll, Montgomery, Anne Arundel, Baltimore, Harford, Prince George's, Calvert, St. Mary's, Charles
Eastern Shore	Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Somerset, Wicomico, Worcester

Respondents were asked questions about their contacts with black bears, attitudes toward black bears, strategies to avoid black bear nuisance behavior, and their opinion of regulated hunting of black bears.

The survey questionnaire was developed cooperatively by Responsive Management and the Maryland DNR. A pre-test of the questionnaire was conducted, and revisions were made to the questionnaire based on the pre-test. The survey was administered June 2004; the total number of completed interviews is 831.

For the survey, telephones were selected as the preferred sampling medium because of the universality of telephone ownership. The data were collected using Questionnaire Programming Language 4.1, which is computer software specifically designed for survey data collection. The

analysis was conducted using the Statistical Package for the Social Sciences 11.5 and proprietary software developed by Responsive Management.

KNOWLEDGE AND AWARENESS OF BLACK BEARS IN MARYLAND

- Respondents most commonly (48%) reported that they know a little about black bears in Maryland; 2% of respondents reported that they know a great deal about black bears in Maryland.
 - There is substantial regional variation, with Western Region respondents claiming the most knowledge of black bears in Maryland. Specifically, 11% of Western Region respondents, 2% each of Mid-Western Region respondents and Eastern Shore Region respondents, and 1% of Central/Southern Region respondents reported that they know a great deal about black bears in Maryland.
 - 44% of Western Region respondents said they know a great deal or moderate amount about black bears in Maryland, a percentage that far exceeds the percentage of respondents from any other region who responded that they know a great deal or moderate amount.
 - A decline in knowledge correlated with a greater distance from the Western Region: respondents knew less about black bears in Maryland the farther they moved from the bears' range in the Western Region.
- A majority of respondents (55%) believe black bears are rare in Maryland today, 29% believe black bears are common, and 3% believe black bears are abundant.
 - The exception is Western Region respondents, a majority of whom (53%) believe black bears are common in Maryland today; 24% of Western Region respondents believe black bears are abundant, and only 18% of Western Region respondents believe black bears are rare.
- The mean of respondents' estimate of the number of black bears living in Maryland is 1,661.
- Respondents most commonly (44%) believe the black bear population in Maryland is at about the right level. There is much regional variation: 47% of Western Region respondents said that the black bear population in Maryland is too high.

CONTACT WITH BLACK BEARS

- A majority (92%) of all respondents have never encountered a black bear in the wild in Maryland.
 - There is substantial regional variation: 65% of Western Region respondents have encountered a black bear in the wild in Maryland, which far exceeds the percentages (ranging from 6% to 10%) from any other region.
- Of those who indicated that they have encountered a black bear in Maryland, a majority (74%) described their encounter as a very or somewhat positive experience.
 - Of those respondents who described their encounter as positive, 60% credited aesthetic reasons (e.g., black bears are beautiful).
 - Of those respondents who described their encounter as negative, 44% said the black bear was aggressive.
- An overwhelming majority (98%) of all respondents have not had problems with black bears in their neighborhoods or around their homes in the past 2 years.

Black Bear Management Plan

- Due to the larger black bear population in their area, Western Region respondents more commonly (24%) had problems with black bears in their neighborhoods or around their homes in the past 2 years.
- Those respondents who had problems with black bears in the past 2 years most commonly reported that black bears caused problems with birdfeeders (36%) and with garbage (29%).
 - 30% of Central/Southern Region respondents reported that black bears caused problems by threatening humans.
- Of those respondents who had problems with black bears in the past 2 years, a majority (93%) did not contact anyone as a result of the problem.

ATTITUDES TOWARD BLACK BEARS

- A majority (77%) of respondents strongly or moderately support having black bears in Maryland; 7% of all respondents moderately or strongly oppose having black bears in Maryland.
 - Mid-Western Region respondents demonstrated the greatest support, with 47% strongly supporting having black bears in Maryland.
 - Western Region respondents demonstrated the most opposition, with 17% of Western Region respondents moderately or strongly opposing having black bears in Maryland.
- Overall, a majority of respondents statewide (58%) strongly or moderately oppose having black bears within 0.5 miles of their home; however, there is much regional variation, with a majority of Western Region respondents (53%) in support. Support narrowly exceeded opposition in the Mid-Western Region (46% supported, and 44% opposed); majorities opposed in the Central/Southern (59%) and the Eastern Shore (65%) Regions.
- A majority of respondents (61%) strongly or moderately support allowing the black bear population to expand naturally into other parts of Maryland, with no marked regional differences.
 - 24% of all respondents moderately or strongly oppose allowing the black bear population to expand naturally into other parts of Maryland.
- A majority (72%) of all respondents strongly or moderately support expanding black bear populations into other parts of Maryland through relocation into acceptable habitats, with little regional variation.
- Respondents were asked four questions regarding perceived problems with black bears in Maryland. A majority (91%) of all respondents agree that most problems with black bears in Maryland can be prevented by taking a few simple precautions, such as using bear-proof trash containers (this statement had the highest percentage in agreement).
 - Less than a quarter (23%) of all respondents agree that black bears will kill many livestock and pets in Maryland (this statement had the lowest percentage in agreement).
- A majority (52%) of respondents moderately or strongly disagree that black bears in Maryland are dangerous to humans.
 - 35% of all respondents strongly or moderately agree that black bears in Maryland are dangerous to humans.

Black Bear Management Plan

- The Eastern Shore was the only region in which agreement exceeded disagreement: 45% of Eastern Shore respondents agree that black bears in Maryland are dangerous to humans, while 43% disagree.
- A majority (56%) of respondents moderately or strongly disagree that black bears will kill many livestock and pets in Maryland.
- Overall, respondents were fairly evenly divided regarding whether they agree (41%) or disagree (44%) that black bears will frequently enter into populated areas in Maryland. However, there is much regional variation, with majorities in agreement in the Western Region (67%) and the Mid-Western Region (52%).
- A majority (91%) of all respondents strongly or moderately agree that most problems with black bears in Maryland can be prevented by taking a few simple precautions, such as using bear-proof trash containers.
- Respondents were asked six questions about preserving black bears and their habitat. The statements with which the highest percentage of respondents agree are that preserving habitat on which black bears depend is important (93%), that black bears should be preserved for future generations (93%), and that black bears have an inherent right to live in Maryland (90%). Indeed, majorities agree with all statements except, “There is no need for black bears in Maryland.”

BLACK BEAR NUISANCE BEHAVIOR IN MARYLAND

- Overall, a slight majority (51%) of all respondents believe the Maryland DNR has done an excellent or good job of managing black bears in Maryland; 15% rate it as fair or poor.
 - Western Region respondents are the most likely (33%) to say the Maryland DNR has done a fair or poor job of managing black bears in Maryland.
- Respondents were asked four questions concerning strategies to avoid problems with black bears in Maryland. The strategy that the highest percentage of respondents support is requiring people visiting or living in black bear habitat to practice good sanitation practices and trash management (92%). There was less support, although still a majority, for the other three strategies: requiring people visiting or living in black bear habitat to use bear-proof trash and food containers (64%), using electronic fencing around small area bear attractants such as beehives and aviaries (64%), and prohibiting people visiting or living in black bear habitat from using birdfeeders or participating in other wildlife feeding activities (54%).
- Respondents were asked three questions concerning their support for or opposition to having the Maryland DNR use repellents for various situations. Although respondents’ support is consistently high for all three situations, having the DNR use repellents for black bears that threaten human safety in Maryland held the most support (93%)
- Respondents were asked three questions concerning their support for or opposition to depredation permits. Overall, respondents showed more support for depredation permits for black bears that cause damage to livestock or pets (57%), but less support for depredation permits for black bears that cause damage to personal property or crops (44%). Respondents had little support (20%) for allowing private citizens to kill bears that are causing damage to personal property or crops without first obtaining a depredation permit from the Maryland DNR.

- A higher percentage of respondents agree (49%) than disagree (36%) that the property owner should be compensated when black bear damage occurs to livestock in Maryland.
 - Western Region respondents are more likely (71%) to agree that the property owner should be compensated when black bear damage occurs to livestock in Maryland.
- Respondents are nearly evenly split in their agreement (46%) and disagreement (42%) that the property owner should be compensated when black bear damage occurs to private property such as fences or buildings in Maryland.
 - Western Region respondents are more likely (66%) to agree that the property owner should be compensated when black bear damage occurs to private property such as fences or buildings in Maryland.
- Respondents are nearly evenly split in their disagreement (45%) and agreement (44%) that the property owner should be compensated when black bear damage occurs to crops in Maryland.
 - Western respondents are more likely (66%) to agree that the property owner should be compensated when black bear damage occurs to crops in Maryland.
- Of those respondents who agree that property owners should be compensated for black bear damage, 35% believe the money for compensation should come from general state revenues (state tax). Other common sources include hunting licenses in general (17%) and black bear hunting licenses (9%).

REGULATING THE BLACK BEAR POPULATION IN MARYLAND

- A majority (65%) of all respondents support regulated hunting as a way to control black bear populations in Maryland, while 29% of all respondents oppose regulated hunting.
 - Western Region respondents are more likely (78%) to support regulated hunting as a way to control black bear populations in Maryland. In fact, 56% of Western Region respondents strongly support regulated hunting as a way to control black bear populations in Maryland.
- Respondents were asked seven questions concerning their support for or opposition to black bear hunting under various scenarios. The scenarios for which respondents are the most likely to support black bear hunting are if they knew the black bear population, as a whole, would not be endangered (78%) or if they knew that black bear hunting would be allowed only if the DNR determined that hunting methods were fair, sportsmanlike, and conformed to the ethics of “fair chase” (78%).
 - Although overall support was often close between regions, Western Region respondents often led in strong support, which may be an indication that they have set opinions.
- The mean of all respondents’ perceived reasonable fee for a Maryland resident to have the opportunity to hunt black bear in Maryland is \$203.
 - The mean of Eastern Shore Region respondents’ perceived reasonable fee for black bear hunting is \$312, the mean of Mid-Western Region respondents’ perceived reasonable fee is \$279, the mean of Western Region respondents’ perceived reasonable fee is \$217, and the mean of Central/Southern Region respondents’ perceived reasonable fee is \$187.

Black Bear Management Plan

- A majority (59%) of all respondents strongly or moderately support passive management of black bears, or allowing nature to take its course; 35% of all respondents oppose passive management.
 - Western Region respondents are more likely (47%) to oppose passive management of black bears.
- A majority (57%) of all respondents strongly or moderately support having Maryland DNR sharpshooters kill black bears when necessary as a way to control populations in Maryland; 39% of all respondents moderately or strongly oppose. There is no marked regional variation.

INFORMATION SOURCES ABOUT BLACK BEARS

- When asked in an open-ended question (i.e., no list is read, and respondents can give any response) to name the agency or organization that is the most credible regarding black bears, respondents most commonly named the Maryland DNR's Wildlife and Heritage Service (32%), followed by the Maryland DNR excluding the Wildlife and Heritage Service (27%). In total, a majority of respondents gave a DNR-related response (59%). There is little regional variation.
- Respondents most commonly (29%) get their information about black bears from the newspaper. Other common information sources include television (17%), word-of-mouth (16%), magazines (14%), the Internet (not including the DNR Website, 12%), and family or friends (9%).
- Western Region respondents are more likely to get their information from the newspaper (53%), by word-of-mouth (33%), and through family or friends (24%).